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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/599,404	09/28/2006	Stein Kuiper	NL 040335	8393

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EXAMINER

CALLAWAY, JADE R

ART UNIT	PAPER NUMBER
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2872

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/599,404	Applicant(s) KUIPER ET AL.	
	Examiner JADE R. CALLAWAY	Art Unit 2872	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 16 January 2009.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-13 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-13 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 28 September 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Response to Amendment

1. The amendments to the claims and the abstract of the disclosure, in the submission dated 1/16/09, are acknowledged and accepted.

Response to Arguments

2. Applicant's arguments filed 1/16/09 have been fully considered but they are not persuasive. Applicants argue that there is no reason to combine the teachings of Berge et al. and Borra et al. because of the substantially different dimensions of the prior-art structures and the diverse fields of endeavor. The Examiner respectfully disagrees. It has been held that a prior art reference must either be in the field of applicant's endeavor or, if not, then be reasonably pertinent to the particular problem with which the applicant was concerned, in order to be relied upon as a basis for rejection of the claimed invention. See *In re Oetiker*, 977 F.2d 1443, 24 USPQ2d 1443 (Fed. Cir. 1992). In this instance Berge et al. and Borra et al. are both pertinent to the particular problem of varying an optical element using liquid or liquid-like film interfaces. As such, the substantially different dimensions merely show that the technology can be used on a small or large scale depending on the particular application. A person of ordinary skill in the art at the time the invention was made would have been motivated to broaden the applications and uses of the optical element to correct focusing errors in different systems. Correcting focusing errors is pertinent to both small-scale and large-scale optical systems.

In response to applicant's argument that the examiner's conclusion of obviousness is based upon improper hindsight reasoning, it must be recognized that any judgment on obviousness is in a sense necessarily a reconstruction based upon hindsight reasoning. But so long as it takes into account only knowledge which was within the level of ordinary skill at the time the claimed invention was made, and does not include knowledge gleaned only from the applicant's disclosure, such a reconstruction is proper. See *In re McLaughlin*, 443 F.2d 1392, 170 USPQ 209 (CCPA 1971). A person of ordinary skill in the art examining the particular problem of varying an optical element using liquid or liquid-like film interfaces could look to both Berge et al. and Borra et al. to solve the problem without improper hindsight reasoning.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 1-8, and 12-13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Berge et al. (6,369,954) in view of Borra et al. (The Astrophysical Journal, 516:L115-L118, 1999 May 10) of record.

Consider claim 1, Berge et al. disclose (e.g. figures 1-2) a variable optical element comprising: a fluid chamber (not labeled); an optical axis (0 optical axis) extending through at least a portion of the fluid chamber; a first fluid which is at least one of polar and conductive (13, conductor liquid) and a second fluid (11, insulating

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liquid) in contact over an interface (labeled as A or B) extending transverse the optical axis, the fluids being substantially immiscible; an interface adjuster (16, 17 electrodes) arranged to alter the configuration of the interface via the electrowetting effect [col. 3, lines 3-53]. However, Berge et al. do not disclose that the optical element is a mirror wherein the interface comprises a reflective material. Berge et al. and Borra et al. are related as variable optical devices. Borra et al. teach a variable mirror wherein an interface comprises a reflective material [Section 5]. It would have been obvious to a person of ordinary skill in the art at the time the invention was made to modify the device of Berge et al., as taught by Borra et al., in order to broaden the applications and uses of the optical element to correct focusing errors in multiple systems.

Consider claim 2, the modified Berge et al. reference discloses that the reflective material comprises a metal [Borra et al.: Section 5].

Consider claim 3, the modified Berge et al reference discloses that the reflective material comprises a Metal Liquid-Like Film [Borra et al.: Section 5].

Consider claim 4, the modified Berge et al. reference discloses that the reflective material comprises a thin metal layer on an organic polymer layer [Borra et al.: Section 5].

Consider claim 5, the modified Berge et al. reference discloses (e.g. figures 1-2 of Berge et al.) a device wherein the interface adjuster comprises: a first electrowetting electrode (17, electrode) in electrical contact with the first fluid (13, conductor liquid); at least one second electrowetting electrode (16, electrode) located adjacent to the interface (labeled as A or B); and a voltage source (V) for applying a voltage between

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the first and second electrodes for altering the configuration of the interface [col. 3, lines 3-52 of Berge et al.].

Consider claim 6, the modified Berge et al. reference discloses (e.g. figures 1-2 of Berge et al.) a device wherein an edge of the interface (labeled as A or B) is constrained by the fluid chamber (not labeled) and the second electrowetting electrode (16, electrode) is arranged to act on at least a portion of the interface edge [col. 2, lines 3-52 of Berge et al.].

Consider claim 7, the modified Berge et al. reference discloses (e.g. figures 1-2 of Berge et al.) a device wherein the second electrode (16, electrode) is separated from the interface (labeled as A or B) by at least a portion of the second fluid (11, insulating liquid) [col. 3, lines 3-52 of Berge et al.].

Consider claim 8, the modified Berge et al. reference discloses an optical device comprising a variable mirror (i.e. a telescope with a variable mirror) [Section 1 of Borra et al.].

Consider claim 13, the modified Berge et al. reference discloses a method of operating an optical device; the optical device comprising a variable mirror, the method comprising controllably altering the configuration of the interface (via, varying the voltage applied to electrodes 16 and 17) so that the device provides the desired properties [col. 3, lines 3-52 of Berge et al. and Section 5 of Borra et al.].

Consider claim 12, Berge et al. disclose (e.g. figures 1-2) a method of manufacturing a variable optical element comprising the steps of: providing a fluid chamber (not labeled); an optical axis (0 optical axis) extending through at least a

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portion of the fluid chamber; providing a first fluid which is at least one of polar and conductive (13, conductor liquid) and a second fluid (11, insulating liquid) in contact over an interface (labeled as A or B) extending transverse the optical axis, the fluids being substantially immiscible; and providing an interface adjuster (16, 17 electrodes) arranged to alter the configuration of the interface via the electrowetting effect [col. 3, lines 3-53]. However, Berge et al. do not disclose that the optical element is a mirror wherein the interface comprises a reflective material. Berge et al. and Borra et al. are related as variable optical devices. Borra et al. teach a variable mirror wherein an interface comprises a reflective material [Section 5]. It would have been obvious to a person of ordinary skill in the art at the time the invention was made to modify the device of Berge et al., as taught by Borra et al., in order to broaden the applications and uses of the optical element to correct focusing errors in multiple systems.

5. Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over Berge et al. in view of Borra et al. (The Astrophysical Journal, 516:L115-L118, 1999 May 10) of record, as applied to claim 1 above, and further in view of Hügenell (5,430,577) and Kogelnik et al. (Applied Optics, Vol. 5, No 10, October 1965) of record.

Consider claim 9, the modified Berge et al. reference does not disclose an optical device that comprises a laser cavity including the variable mirror, the cavity further including a second mirror. Berge et al., Borra et al. and Hügenell are related as optical devices. Hügenell teaches (e.g. figure 1) an optical device wherein the optical device comprises a cavity (12, reflector support system) including the variable mirror (5,7 primary mirrors) and a second mirror (2, 3 secondary mirrors) [col. 2, lines 23-58,

col. 4, lines 8-48]. It would have been obvious to a person of ordinary skill in the art at the time the invention was made to modify the device of the modified Berge et al. reference, as taught by Hügenell, in order to improve image quality by adjusting the variable elements to provide wavefront error correction. However, the modified Berge et al. reference does not disclose that the cavity is a laser cavity. Berge et al., Borra et al., Hügenell et al. and Kogelnik et al. are related as optical elements. Kogelnik et al. teach a laser cavity that includes two mirrors [Section 3.5]. It would have been obvious to a person of ordinary skill in the art at the time the invention was made to modify the device of the modified Berge et al. reference, in order to use the technology of variable mirrors to correct for curvature aberrations in other systems comprising mirrors.

6. Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over Berge et al. in view of Borra et al. (The Astrophysical Journal, 516:L115-L118, 1999 May 10) of record, as applied to claim 1 above, and further in view of Hügenell (5,430,577).

Consider claim 10, the modified Berge et al. reference does not disclose that the optical device comprises a Cassegrain system comprising a primary mirror and a secondary mirror, the primary mirror being formed by a variable mirror. Berge et al., Borra et al. and Hügenell are related as devices with variable optical elements. Hügenell discloses (e.g. figure 1 of Hügenell) an optical device wherein the optical device comprises a Cassegrain system comprising a primary mirror (5, 7 primary mirrors) and a secondary mirror (2,3 secondary mirrors), the primary mirror being formed by a variable mirror [col. 2, lines 23-58, col. 4, lines 8-48]. It would have been obvious to a person of ordinary skill in the art at the time the invention was made to

modify the device of the modified Berge et al. reference, as taught by Hügenell, in order to improve image quality by adjusting the variable elements to provide wavefront error correction.

7. Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over Berge et al. in view of Borra et al. (The Astrophysical Journal, 516:L115-L118, 1999 May 10) of record, as applied to claim 1 above, and further in view of Yamada (JP 8-190070 A).

Consider claim 11, the modified Berge et al. reference does not disclose that the optical devices comprises an optical scanning device for scanning an optical record carrier. Berge et al., Borra et al. and Yamada are related as optical devices. Yamada discloses (e.g. figures 1 and 2) an optical device comprising an optical scanning device for scanning an optical record carrier (7, scan layer) [abstract]. It would have been obvious to a person of ordinary skill in the art at the time the invention was made to modify the device of the modified Berge et al. reference, as taught by Yamada, in order to correct for curvature aberrations to reduce scanning error.

Conclusion

8. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within

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TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to JADE R. CALLAWAY whose telephone number is (571)272-8199. The examiner can normally be reached on Monday to Friday 7:00 am - 4:30 pm est.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stephone B. Allen can be reached on 571-272-2434. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

JRC
/JADE R. CALLAWAY/
Examiner, Art Unit 2872

/Stephone B. Allen/
Supervisory Patent Examiner
Art Unit 2872